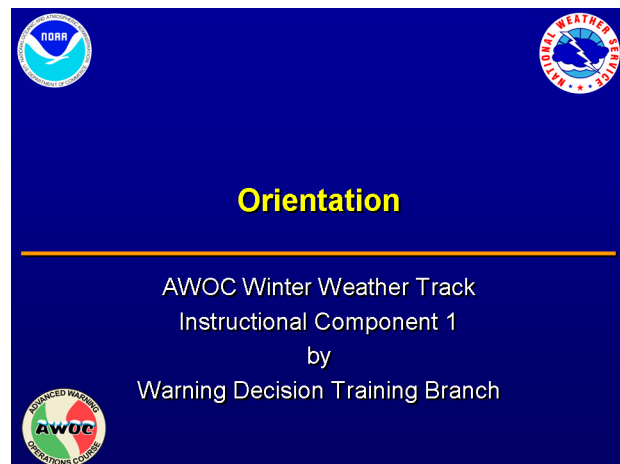# 1. IC1.1: Orientation

Instructor Notes: This instructional component is designed to introduce you to the AWOC Winter Weather Track. For the next 20-25 minutes, we're going to be showing you a brand new training course on winter weather developed by partners in the NWS in collaboration with the Warning Decision Training Branch. This is the first comprehensive winter weather warning decision making course for NOAA's NWS.
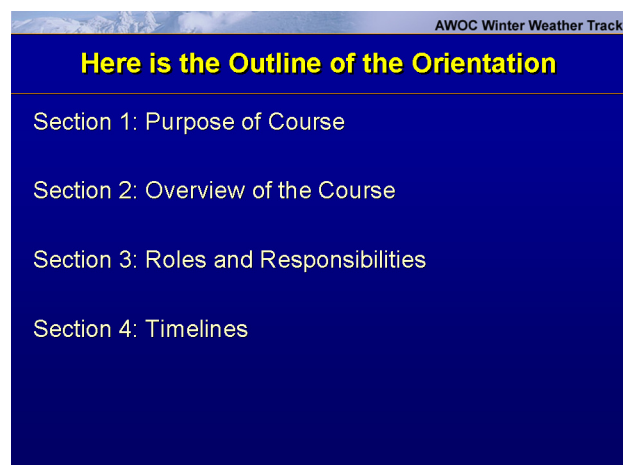
Student Notes:

2. Here is the Outline of the Orientation

Instructor Notes: Section 1 describes the goals of the course such as GPRA goals. Section 2 details the structure of the course, such as ICs and objectives. Section 3 describes the roles of the training management team and Section 4 briefly describes the course delivery schedule.

Student Notes:

3. Section 1: Purpose of the Course Why a Winter Weather Track?

Instructor Notes: Recent statistics in 2004 on adverse weather impacts on transportation by the Federal Highway Administration (FHWA) indicate that winter weather dramatically impacts roadway safety. Each year 18% of fatal crashes and 22% of injury crashes occur due to combination of adverse weather (rain, snow, sleet, hail, or fog) and poor pavement conditions. 74% of nation's roads are located in snowy locations (and 70% of the population). Reported economic losses of $42 billion are from adverse weather from travel delays: 23% ($10 B) due to fog, snow, and ice, additional road operating costs, and maintenance costs. Nearly 39% of road operating costs can be attributed to winter maintenance annually. Each year, state and local agencies spend over 2.3 billion dollars on snow and ice control operations and an est. $5 billion to repair roadway infrastructure (Paul Pisano, Lynette Goodwin, and Andrew Stern, 2004: Surface Transportation Safety and Operations: The Impact of Winter within the Context of Climate Change). The image at the right is of Red Cross workers searching for victims buried in cars following heavy snowfall. The picture shows the roof of a car. Location: Buffalo, New York; Photo Date: February, 1977; Photographer: American Red Cross.

Student Notes:

4. Section 1: Why a Winter Weather Track?

Instructor Notes: The impacts on the transportation sector of our nation's commerce are well-known and significant. There have been several recent studies on the impacts of snow on roadway traffic (you will want to see the lesson on societal impacts). The picture shown was taken from the Jan. 26, 1967 snowstorm in Chicago, IL. Picture taken from the Dept. of Streets and Sanitation.

Student Notes:

Section 1: Why a Winter Weather Track?

- Winter Weather Impacts on Transportation (cont.)
  - Freeway speed and traffic volume reduced by 16-30%
  - 23% of travel time delays
  - Increased operating and maintenance costs (nearly 39% of road operating costs can be attributed to winter maintenance annually)

Chicago, IL, Jan. 26, 1967, Photographer: Dept. of Streets and Sanitation

5. Section 1: Why a Winter Weather Track?

Instructor Notes: Adverse winter weather impacts sectors of the economy in many ways, most notably with increased gas and electric consumption and inflated costs to heat businesses and homes. Over $3 trillion of the nation's annual economy is now directly affected by weather events (Freedman, 2003). With the change of the energy industry to a "no storage" model, energy availability is always "on the edge" and flirting with crisis in consumption and availability. Costs associated with snow removal industry are tied mostly to amounts and duration, which are linked to people hours. Also, property losses from winter storms can be significant, esp. with big snowstorms (March 2003, Denver Colorado $93 M) or ice storms (98 NE/Canada Ice Storm, $1.4 B USD, $3 B in Canada). When businesses close due to adverse weather, the local economies are affected. Insurance losses associated with one major winter storm can cost up to $6 billion (Kunkel et al, 99).

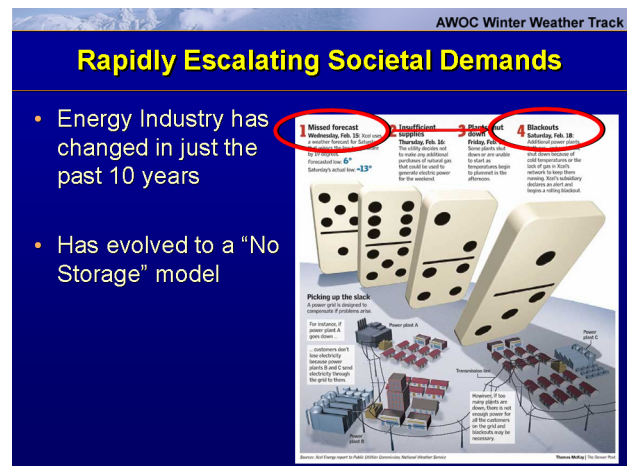**Student Notes:**

Section 1: Why a Winter Weather Track?

- Impacts on Public
  - No energy reserves
  - Heating costs
  - Snow-removal costs
  - Closures
  - Insurance losses

Courtesy Department of Sanitation, New York City

6. Rapidly Escalating Societal Demands

Instructor Notes: More impacts on society from winter weather include the change in the energy industry to a no storage model. Missed forecasts can lead to rolling blackouts due to consumer demand plus required reserves exceeding capacity available. This example from February 2006 in Colorado was taken from the Denver Post.
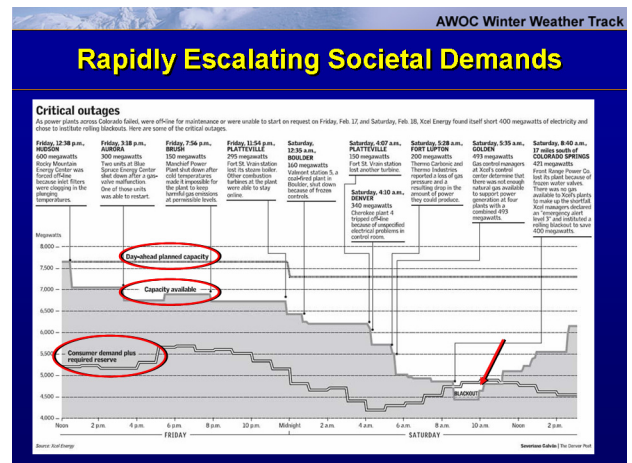
Student Notes:

7. Rapidly Escalating Societal Demands

Instructor Notes: Note the critical outages occurred on Saturday morning around 9-10 am.

Student Notes:

8. Section 1: Why a Winter Weather Track?

Instructor Notes: Winter weather affects our children, and slick roads can cause devastating accidents. All schools have a specific plan of action to mitigate winter weather impacts. Most schools do not close during the day because there is no one home to pick

them up. Schools make their decisions on when to close usually 1-2 hours before buses are scheduled to leave which, in many districts is around 6 A.M. local time. School super-intendents meet with local transportation officials and make a decision using direct observations, the current weather forecasts (from TV and internet), and what other districts are doing. There are other variables to the decision making process when events occur that are "unexpected" (such as a "rush-hour" storm).

Student Notes:

9. So, What are the Goals of the Course?

Instructor Notes: With all of these societal impacts it is clear that winter weather is an important priority for training. The course that WDTB has helped develop is composed of the latest science, technology, and human factors associated with winter weather warning decision making.

Student Notes:

10. We Use These Metrics to Report Our Performance to the Public and to Congress

Instructor Notes: 7 of the 14 GPRA goals which are reported to Congress and the White House are warning related. The 2006 GPRA goals for winter weather are POD= 90%, and Lead time = 15 hours. As a whole the NWS is very close to these goals. However, these goals are bulk measures and are conservative in nature, according to Dr. Uccellini. For example, they do not reflect our stretch goals, or what the public expects. User expectations are increasing with each event. In a memo from NWS director DL Johnson last year, he stated the reason for AWOC was very important because of the relationship to the warning GPRA goals. This memo sent an important message: "AWOC training is directly tied to skills necessary to perform our mission."

Student Notes:

11. Section 1: Purpose of Course (Cont.)

Instructor Notes: Since winter weather impacts transportation goals, we need to consider the components of surface weather such as the onset of precipitation (frozen and freezing) in the course goals.
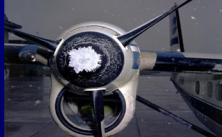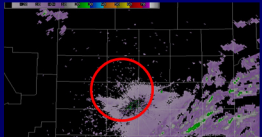
Student Notes:

> **AWOC Winter Weather Track**
>
> **Section 1: Purpose of Course (cont.)**
>
> • The training is also directly related to NOAA Commerce and Transportation Goals
>   – Surface Weather Program
>   – Accuracy of onset of event (frozen and freezing precip)
>   – 0-6 hrs period: 85%
>   – Aviation Program
>
> | | 2005 | 2006 | 2007 | 2008 | 2009 |
> |---|---|---|---|---|---|
> | Aviation Forecasts (Ceiling & Visibility) - Accuracy (%) | 48 | 46 | 46 | 48 | 50 | 52 | 55 |
> | Aviation Forecasts - (Ceiling & Visibility) False Alarm Rate (%) | 64 | 70 | 68 | 68 | 67 | 66 | 65 |

12. Section 2: Overview of the AWWT

Instructor Notes: This is what we are going to talk about in section 2. But first, a bit about how we got here. The initial needs and training priorities were determined from the NSTEP Winter Program Team. WDTB then assessed priorities from the field to help determine what training topics should be addressed in the AWOC Winter Track.

Student Notes:

> **AWOC Winter Weather Track**
>
> **Section 2 : Overview of the AWWT**
>
> • Collaborative Development Process
>
> • What's in the Course?

13. Partnerships

Instructor Notes: We enlisted a volunteer team of 25 Subject Matter Experts (SMEs) for direct content development and/or review. This collaboration was a new way of doing business but proved very exciting and productive.

Student Notes:

14. Section 2: Here is the AWWT

Instructor Notes: The intended audience is forecasters with winter weather warning responsibilities. The pre-requisites are DLOC. The deliverables are 21 hours of on-line content, printed materials, and a WES case.
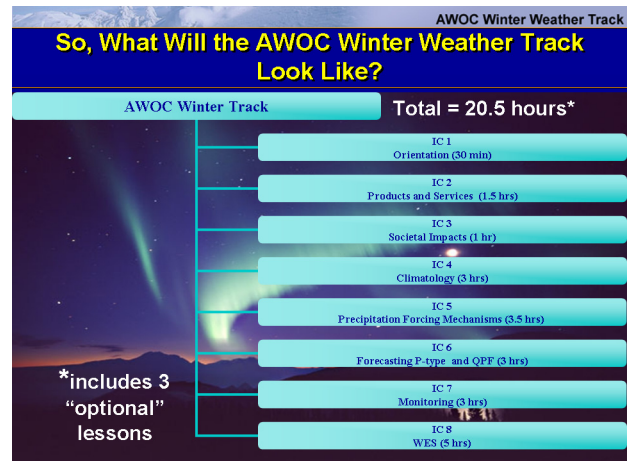
Student Notes:

15. So, What Will the AWOC Winter Weather Track Look Like?

Instructor Notes: This begins Section 2 of the Orientation. This is how the course breaks down into individual instructional components. 25 Subject Matter Experts in Winter Weather have collaborated with WDTB in developing these ICs. It amounts to about 21 hours of instruction. That includes all 31 lessons. There are 3 lessons that are optional (topographic forcing, using CPC products, and LES). That reduces the length of instruction to 19 hours.

Student Notes:

16. Section 2: How are the ICs Stuctured?

Instructor Notes: There are multiple lessons within each IC. After completing each lesson, the student will need to take an exam in the LMS that addresses the learning objectives of the course.
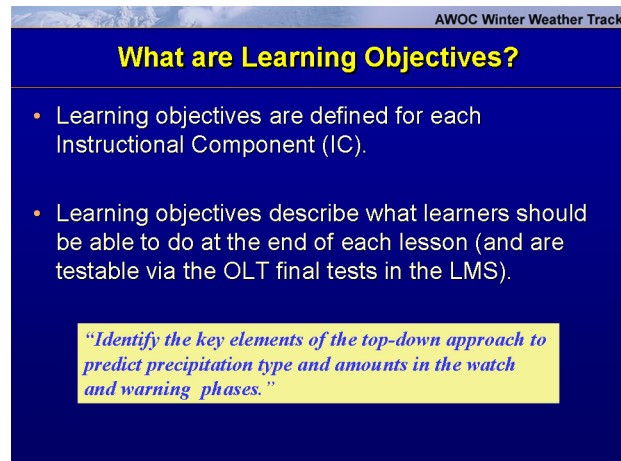
Student Notes:
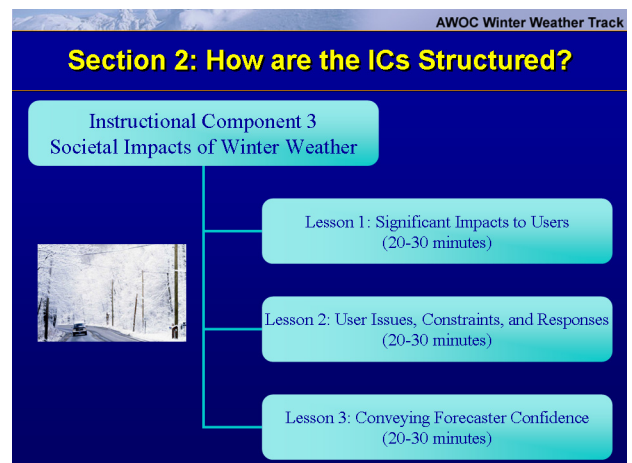
17. What are Learning Objectives?
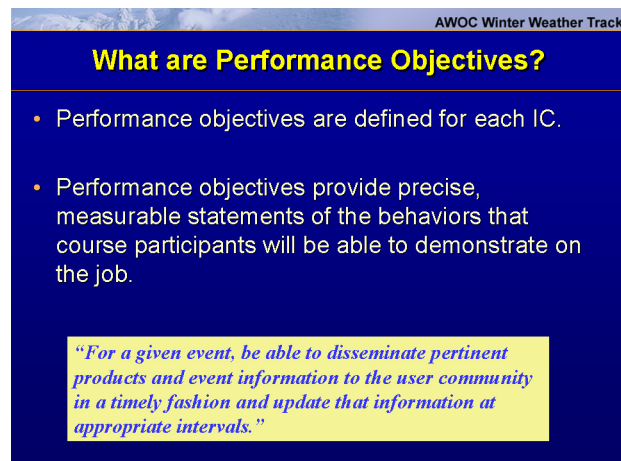
Instructor Notes: Learning objectives are defined and described in the ICs for each lesson.

Student Notes:

18. What are Performance Objectives?

Instructor Notes: IC performance objectives are similar to the learning objectives and are defined for each lesson. Many of performance objectives will be included in IC 8, the Weather Event Simulator (WES) instructional case for the course. Facilitators should evaluate how well students can master specific performance objectives for each IC. After the entire course has been completed, students will be evaluated on the extent of training transfer of the performance objectives, to help determine behavioral changes. This is part of the level-3 training evaluation process.

Student Notes:

19. Learning Activities for Each IC?

Instructor Notes: Articulates are a way you can play a PowerPoint presentation and hear the author deliver the speaker notes. Note, you can start and stop the Articulates (it remembers where you left off). In addition, we have lots of increased inter activity and of course, the WES simulations.

Student Notes:
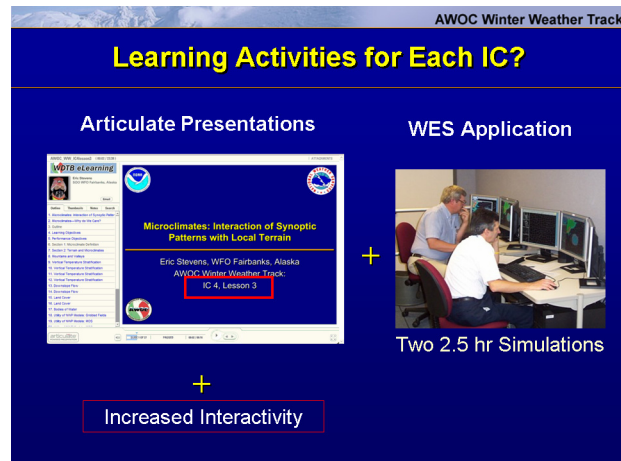
20. Interactivity Increases Knowledge Retention

Instructor Notes: Most articulate presentations will contain increased interactivity with quiz questions, and some modules will have short 15 minute optional job sheets along with mini-case data that are separate from the primary Simulation case.

Student Notes:
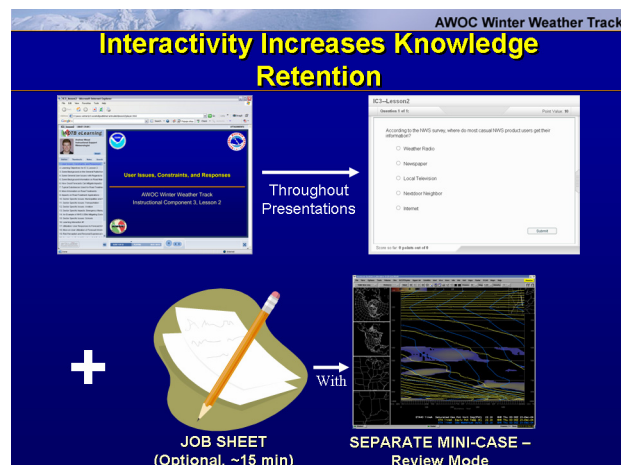
21. What are Job Sheets?

Instructor Notes: The job sheets will take 10-15 minutes to run through and we'll look at an example on the next slide. We are producing job sheets for those ICs that examine AWIPS case data in the warning process. You will not need to run the WES in simulator mode. Since these will be for case review mode, all that will be required is setting the clock to the desired event time. We plan on having just one model run, a few satellite images, surface observations, and radar imagery for one event. Thus, case size will be small, and even more importantly, many lesson job sheets can be applied to the same event. So the number of cases will be fewer than the number of job sheets. The goal is to have the job sheet case data loaded on your WES machines by the time the Winter

Weather AWOC training modules are released. We will have answer sheets available online.

Student Notes:

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22. Job Sheets—An Example

Instructor Notes: This is an example of one of the job sheets for AWOC Winter Weather Track.

Student Notes:

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23. Sample Quiz Question

Instructor Notes: Based on field input, several scenarios are presented in IC 2 lesson 1 to help you decide what winter weather products to issue. These scenarios are examples of increased interactivity in the lessons.

Student Notes:

24. Winter Simulation Case

Instructor Notes: The WES case will be delivered with multiple DVDs by early July. The version will include support for GFE/GHG for issuing warnings. We will have multiple simulation examples complete with performance objectives and evaluation criteria for 2 CWAs. As with the previous AWOC Course, feel free to select your own local cases for a winter weather simulation. New with this simulation are GFE and SREF imagery. As always, WESSL will play a role in the simulation.

Student Notes:

25. How Difficult are the Lessons?

Instructor Notes: Some concepts may be review for some, but new for others.

Student Notes:

26. Section 3: What is Your Responsibility?

Instructor Notes: This is the recommended course of action for students in AWOC.

Student Notes:

27. What Do Facilitators Do to Help AWOC?

Instructor Notes: Facilitators are your helpers and they will help with the training – and make sure the training is performance based. Training can be a risky path unless we have some guidance.

Student Notes:

28. Facilitator and Learning Management System

Instructor Notes: Facilitators must perform certain duties in the LMS including: Assigning a Learning Path, Marking User Defined Tasks Complete, and Completing the AWOC Track. There are Job Sheets on these tasks on the WDTB Web site. It is important to note that if you are facilitating the Winter Track, you need to be a Facility Instructor in the LMS. If you need help with this send a message to awochelp@wdtb.noaa.gov.

Student Notes:

29. This Can Be Winter Weather AWOC's Impact

Instructor Notes: This survey results were from 260 NOAA NWS employees, including 30 MICs and 30 SOOs. The post-training survey indicated that performance improvement was significant, but only because all factors for learning were addressed, including involving management in the process. We are aiming for even highest performance improvement in the winter AWOC course.

Student Notes:

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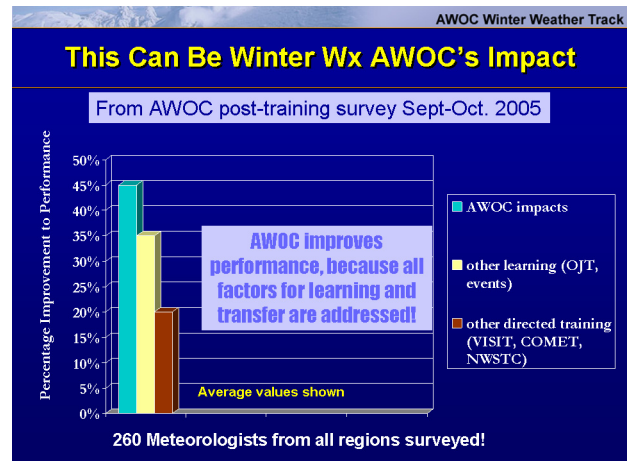
30. Course Completion Requirements

Instructor Notes: Every student registered in the AWWT is required to complete at least 28 lessons (note: 3 lessons are optional).
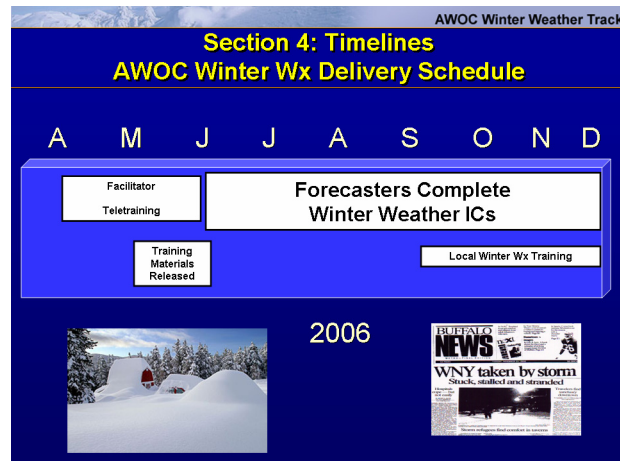
Student Notes:

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31. Section 4: Timelines AWOC Winter Weather Delivery Schedule

Instructor Notes: Forecasters have from June 5 until the end of December 2006 to complete the course.

Student Notes:

32. Who Can Help?

Instructor Notes: We do provide a number of options to help alleviate potential problems in executing this course. Take advantage of these mechanisms to make the learning easier and the course more enjoyable.

Student Notes:
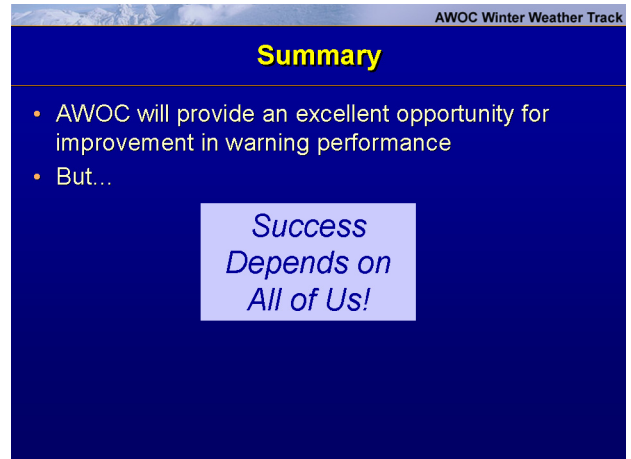
33. Summary and Questions

Instructor Notes: We are committed to providing a rewarding learning experience for all participants in the AWOC Winter Weather Course. But, success in terms of how well it will be accepted and applied depends a lot on you. The developers of this course encourage all members of the entire training community to help provide support for learning and application of these very important learning concepts.

Student Notes: